National Institute of Environmental Health Sciences

Impacts of climate change on indirect human exposure to pathogens and chemicals from agriculture (via EHP)

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Abstract:

Objective: Climate change is likely to affect the nature of pathogens and chemicals in the environment and their fate and transport. Future risks of pathogens and chemicals could therefore be very different from those of today. In this review, we assess the implications of climate change for changes in human exposures to pathogens and chemicals in agricultural systems in the United Kingdom and discuss the subsequent effects on health impacts. Data sources: In this review, we used expert input and considered literature on climate change; health effects resulting from exposure to pathogens and chemicals arising from agriculture; inputs of chemicals and pathogens to agricultural systems; and human exposure pathways for pathogens and chemicals in agricultural systems. Data synthesis: We established the current evidence base for health effects of chemicals and pathogens in the agricultural environment; determined the potential implications of climate change on chemical and pathogen inputs in agricultural systems; and explored the effects of climate change on environmental transport and fate of different contaminant types. We combined these data to assess the implications of climate change in terms of indirect human exposure to pathogens and chemicals in agricultural systems. We then developed recommendations on future research and policy changes to manage any adverse increases in risks. Conclusions: Overall, climate change is likely to increase human exposures to agricultural contaminants. The magnitude of the increases will be highly dependent on the contaminant type. Risks from many pathogens and particulate and particle-associated contaminants could increase significantly. These increases in exposure can, however, be managed for the most part through targeted research and policy changes.

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Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Policymaker, Researcher

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Quality

Food/Water Quality: Chemical, Pathogen

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : United Kingdom

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Developmental Effect, Infectious Disease, Neurological Effect, Urologic Effect

Developmental Effect: Reproductive

Infectious Disease: Foodborne/Waterborne Disease, Vectorborne Disease

Foodborne/Waterborne Disease: Campylobacteriosis, Cryptosporidiosis, General Foodborne/Waterborne Disease, Giardiasis, Salmonellosis

Vectorborne Disease: Mosquito-borne Disease, Tick-borne Disease

Mosquito-borne Disease: Malaria

Tick-borne Disease: Lyme Disease

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Pregnant Women

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content